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ABSTRACT

This paper considers the range of research methods used by the United Kingdom education research community. Using insights from 25 interviews with key stakeholders, it seeks to describe what the current strengths and weaknesses in methods are, and the methodological developments that are needed for the future health of the field. Using survey returns from 521 active researchers, the paper goes on to describe the techniques that the field can use, and those where further "training" or experience is required. Using the 8,691 individual Research Assessment Exercise returns (from a survey of higher education research activities), the paper then summarizes the methods reported to be in actual use. Finally, it uses a brief analysis of journal contents as triangulating evidence. The informants were generally in agreement that there is currently a widespread weakness in the quality of UK education research. Much of this weakness is attributed by them to a shortage of skills in quantitative methods. Other data sources suggest that the latter is less likely than the informants believe. A clear majority of education researchers report having used quantitative methods, and the substantial number of publications involving quantitative methods supports this view. It is, perhaps, rather the type and quality of both quantitative and qualitative research that leads to the poor public image of education research. Improvement is not going to come simply by enlarging the group of people using quantitative methods. Two appendixes provide information about the data collected. (Contains 23 references.) (SLD)

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What is the research capacity of the UK education research community? – reconsidering the 'shortage of quantitative skills' phenomenon

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Abstract

This paper considers the range of research methods used by the UK education research community. Using insights from 25 interviews with key stakeholders it seeks to describe what the current strengths and weaknesses in methods are, and what methodological developments are needed for the future health of the field. Using survey returns from 521 active researchers, the paper goes on to describe the techniques that the field can use, and those where further 'training' or experience is required. Using the 8,691 individual RAE returns to education, the paper then summarises the methods reported to be in actual use. Finally, it uses a brief analysis of journal contents as triangulating evidence.

Our informants were generally in agreement that there is currently a widespread weakness in the quality of UK education research. Much of this weakness is attributed by them to a shortage of skills in 'quantitative' methods. Our other data sources suggest that the latter is less likely than

the informants believe. A clear majority of education researchers report having used quantitative methods, and the substantial number of publications involving quantitative methods supports this view. It is, perhaps, rather the type and quality of both quantitative and qualitative research that leads to the poor public image of education research. Improvement is not going to come simply by enlarging the group of people using quantitative methods.

Introduction

This paper uses data derived from interviews with stakeholders, a survey of education researchers, an analysis of the methods reported in the 2001 RAE returns, and a summary of the methods used in a small number of strategically-selected journals during 2002. Its purpose is to describe the methods currently in use in education research, and consider the ways in which the capacity to do relevant high-quality research might be enhanced.

The funding mechanisms for UK Higher Education Institutions have highlighted the importance of comparative measures of research excellence. One consequence of this has been the Research Assessment Exercise (RAE), carried out in 1992 by the then Universities Funding Council to determine the quality of research undertaken within the higher education sector. The RAE, repeated in 1996 and again in 2001, has provided extensive information for comparing research activity across the whole of the UK. In so far as the criteria can be said to be the same over time, the results of the 2001 RAE record an overall improvement in research quality through universities and colleges across the UK

(HEFCE, 2001). 55% of all research active staff now work in departments graded 5 or 5* compared to 31% in 1996. In addition to this, research at the lower end of the scale (rated 1 or 2) previously accounting for a quarter of all research has now fallen to just 6 per cent (HEFCE, 2001). In 1996 43% of all HEI submissions were graded with 4, 5 or 5*, this rose to 64% in 2001. Some of this improvement is due to the substantial number of persistently low ranking HEIs choosing not to enter for the 2001 RAE due to little or no chance of funding allocation (The United Kingdom Parliament 2002). For 2001, of the 174 institutions that submitted 75% of the funding was allocated to just 24 institutions (McNay, 2003).

The situation for Education (UoA 68) however was somewhat different. In 2001, 29% of submitted researchers were in 5/5* departments (compared to 55% across all subjects), and 17% of submissions were rated 5/5* (compared to 39% across all subjects). There has not been anything like the equivalent growth for this subject. There may, of course, have been mis-classified submissions (in either direction) and significant education-relevant returns to other panels, but the scale of the difference between education and others subjects is remarkable. Surely the simplest explanation overall is that the results for education suggest a relatively poor quality of research, or at least a pressing need to improve the way in which it is reported. McNay (2003) points out disparities in the exercise concerning funding allocation, consistency of sampling and quality assessment definitions for each UoA. Therefore, it is possible to argue that Education has been unfairly treated by its panel, and that the quality of submitted work is actually better than these grades show. However, this is a double-edged argument since it also allows that the panel could

have been overly generous to their own discipline, and that the quality of education research is even worse than recorded.

When these results are put together with a series of widely-publicised criticisms of UK education research, then it seems there may be a case to answer. In recent years there has been mounting attention of the quality of education research both within the research community and in a wider public policy sphere (Richardson 2002). This can be partly attributed to a number of high-profile publications (Hargreaves, 1997, 1999; Hillage et al, 1998; Woodhead 1998, and Tooley and Darby 1998) which have questioned standards of education research activity currently being undertaken within HEIs nationwide. Of these reports, only Tooley and Darby's commentary was based on an, albeit limited, study of empirical evidence (264 articles were scrutinised in four journals to ascertain and reflect standards of good practice in educational research), and somewhat surprisingly generated the greatest opposition to its findings (no evidence apparently being preferred to meagre evidence). To what extent are the above criticisms justified?

One of the initial objectives of the ESRC Teaching and Learning Research Programme (TLRP) Research Capacity Building Network was to undertake an extensive consultation exercise in order to identify the priorities for research capacity-building and to generate a database of expertise from across the UK educational research community. This exercise has involved four elements. The first was to interview key stakeholders from across the education field, from policy-makers and practitioners to funders and researchers. The second part of the consultation exercise has been to survey, as widely as possible, the educational research community in order to identify current expertise in

research and future training needs. The third element was to undertake a simple review of the 'best' education research literature, as determined by publications returned to the 2002 Research Assessment Exercise (RAE). The final element to our consultation exercise involves an audit of the methods used in papers published in a small number of journals chosen on the basis of the third stage.

This paper reports some of the findings from these four elements. It focuses on the range of methods currently being used by academic UK education researchers. The range of data sources used here means that there is no room to discuss wider issues such as the relevance and impact of research, and there is no specific mention of the role of practitioner research. Nor do we reach definite conclusions about what should be done. The paper deals with each element in order, briefly describing our own methods of data collection and analysis, then summarising the results of each.

What are the beliefs about current capacity?

Stakeholder interviews

We interviewed twenty-five key stakeholders, each representing the major constituencies of the UK education community, in 2001/2002. The stakeholders were chosen to represent the major constituencies of the education research world. They included representatives from the following:

- national and local government – comprising elected members, policy-makers, and researchers;

- research funding agencies; education research organisations – such as the British Educational Research Association (BERA), the National Foundation for Educational Research (NFER), the National Educational Research Forum (NERF), the Office for Standards in Education (OFSTED) and the ESRC Teaching and Learning Research Programme (TLRP);
- HE education researchers – including TLRP project leaders, non-TLRP researchers, and Research Assessment Exercise (RAE) panel members;
- the teaching profession – including the General Teaching Council and the Teacher Training Agency;
- education research journal editors;
- and stakeholders with an international perspective (OECD).

The semi-structured interviews concerned the nature of research capacity, the current capacity of the UK community, the role of the respondents' own body, and ideas for capacity building. In particular, they were asked about the current state of education research in the UK, why it is like this, and how education research could continue to move forward. Interviews were recorded, and transcribed, and then sorted according to a variety of themes. Here the emphasis is on the methods used in research, and the need to improve the quality of research.

Selected findings

Quality

When asked about the current state of education research many of the stakeholders began, without prompting, by addressing the published

criticisms referred to above. These have clearly had a major impact upon the stakeholders and prompted them, if they had not already done so, to reflect upon the state of education research in relation to their own experiences. Notably, while written public reaction to these commentaries has tended to be defensive about the current state of education research (e.g. Hodkinson 1998), the response of all stakeholders was to express some agreement with the criticisms. Of course, several also stressed that some research was, and always had been, extremely good.

> The best research was always very good and the best research is still very good. (HE researcher and RAE panel member).

> There is some very good research done and some very poor research done. (Education researcher and BERA Executive Council member)

> I mean I have had for some time a concern about educational research that because it comes from such a variety of institutions and individuals that it probably has greater variation in quality than research in almost every other area. (HE researcher and RAE panel member)

Even when the stakeholders expressed concern about the motivation for the public criticisms, these are seen as ultimately beneficial.

> I think a lot of the current concerns around capacity building go back to those criticism and people say "well ok we've got to strengthen educational research, we've got to make it more relevant and so on". And maybe some good has come out of it. (HE researcher and TLRP Team Leader)

The consensus was that the criticisms had some basis in fact.

> I think well certainly I and other people I know actually go along with a great deal of what David Hargreaves says (HE researcher and UCET Executive Committee member)

> I am starting to sound like David Hargreaves. He had a point actually. The butt of jokes in education departments, who think he is terribly crass to say this, but I think some of the stuff that you look at is rubbish. (Education researcher and BERA Executive Council member)

> It always seems to me with David Hargreaves that he is extremely good at getting things on the agenda, in order to do that he always makes a case, nevertheless, there is always something in what he says. (HE researcher and RAE panel member)

> There is a lot of stuff talking about policy, but it wasn't helping anyone. When you bring it down to the technical level very large amounts of it was technically so bad as to be embarrassing. No discussion about validity and reliability of data for example. No attempt to theorise. (HE researcher and member of NERF)

> I mean I to be honest have been surprised sometimes with what I see as the relatively low level of sophistication in some of the research that's done. (OFSTED research manager)

> Lots of low level cottage industry stuff. Too little understanding that it's actually a skilled, time consuming business not to be engaged in lightly or amateurishly. That sounds a bit hard but as somebody that edits two journals and sits on four or five editorial boards I see a lot of the stuff which people see as their best shot. If you're submitting something for a journal you've really worked it over. Some of the stuff that I see.... thank Christ somebody has brought this for somebody else to look at never mind considered to be published. (HE researcher)

> The people who are doing the current EPPI reviews, the review groups, keep coming back and saying how shocked they are by the poor quality of the literature. (DfES Officer)

> I think the quality of the policy-oriented research has been poor (OECD researcher)

> Well strangely enough I had some sympathy for some of the things Chris Woodhead said about it, because a lot of educational research frankly doesn't tell you a lot that you don't already know... sometimes you question whether in fact it's been done very thoroughly... I think the money we spend is not spent wisely at all. I *do* share the criticism. (Chair of a LEA Education Committee and Local Government Association executive member)

So there is considerable agreement (privately at least) that there is something amiss in the standard of UK education research. We, therefore, cannot agree with Hodkinson (1998) and others who seek to defend themselves from this criticism by asserting that there is no problem of

quality, and so no need for us to improve our research. But neither does this lead us to the conclusion attributed to Chris Woodhead that education research is so poor that it should no longer be funded. We need to improve. So what exactly could we improve in our capacity to undertake research?

Problems of method

Again, there was near consensus among the respondents. While other issues, such as impact, were emphasised the core issue about quality concerned the lack of skills in key methods. A number of stakeholders referred to the lack of research 'skills' among the research community. In this example the deficit referred to concerned knowledge of 'quantitative' techniques.

> *Actually the situation is so bad that people don't realise* they haven't got the skills they need which is even worse than having people who are struggling but aren't sure where to get the skills they need. (DfES officer)

> There aren't the people in the system to provide the research that we want, we know that. (DfES officer).

> I mean, I think the quality of some people in education is highly questionable. I can point to you, I could point the people walking around with PhDs, who demean the title, right. (HE researcher).

> What I think the weakness of a lot of the proposals were and the reasons they weren't funded was the kind of lack of theoretical rigour and methodological rigour and I think that's where

> educational research is weak. (HE researcher and TLRP Team Leader).

This last respondent is referring to their experiences as a Board member for the ESRC. Another common criticism of research is that the conclusions made bear no relationship to the evidence presented (i.e. they are not warranted, a point we return to in the concluding section). In particular, the stakeholders believed that research over-generalised, largely because the majority of education research is considered small-scale and non-cumulative.

> There is a gulf between your evidential base and your conclusions, so sometimes it is like that, quality issues, but other times you cannot understand the relevance of the whole area of study. I would just say it is always a problem about generalising from a small sample. (Education researcher and BERA Executive Council member)

It is at this point that many stakeholders start to differentiate between qualitative and quantitative research methods. There was a clear perception that there is a lack of quantitative research but, as we shall see, the issue of quality and rigour was raised *equally* for quantitative and qualitative research.

Too little quantitative?

The purported shortage of 'quantitative' research in education, and the social sciences more generally, has been given a very high profile in recent years (e.g. Marshall 2001). The issues of causality, being able to test propositions, and the process of generalisation raised by many

stakeholders are more complex than simply the problem of a lack of quantitative research. But nearly every stakeholder reported that there was a regrettable lack of quantitative research, and that this has straightforward consequences for the quality and relevance of research.

> There is a widely acknowledged absence of quantitative research of particular kinds, especially, there's a weakness, there's a relative absence and there's no mechanism for addressing that currently. (HE researcher and TLRP Team Leader)

One consequence of this shortage is that there are simply too few researchers to pass such skills on to their peers or the next generation of researchers.

> It's a real worry in this department that you know in a department of 3,500 students and 190 staff there isn't one strong quantitative lecturer. (HE researcher and UCET Executive Committee member)

> I do feel that we are short of good quantitative researchers in this country and that is a particular need. (HE researcher and TLRP Team Leader)

> Where I think that has failed in a way is when it has not kept the proper balance, as there are plenty of questions that have to be addressed through quantitative methods. (HE researcher and RAE panel member)

> As a journal editor what worries me slightly is that you have so much qualitative stuff. It's very very unusual to get anything

quantitative. (HE researcher and UCET Executive Committee member).

Poor quality qualitative

So there is reasonable consensus among our stakeholders that education research needs improving, and that the greatest weakness is the lack of quantitative work. There is, clearly, a considerable amount of qualitative work and this could be construed a strength. However, there are also concerns over the quality and appropriateness of this work. There was agreement amongst stakeholders that 'qualitative' research, although in a healthier state than 'quantitative' research, has its own limitations.

> Actually there is a quality issue with qualitative research. (HE Researcher and TLRP Steering Committee member).

> On the other side there's an awful lot of qualitative workers where the quality is not very high, as it were, for various reasons. (Chief Executive of research funding agency)

> In qualitative research because certainly when you start to read some of this, and clearly some of it is very good, and some of people working it, have led the field themselves. I mean, that's, you know, that you can take that group out but below that there seemed to be quite a lot of people who are doing qualitative research which isn't terribly good and that maybe because they haven't ever been very well trained in it themselves. (HE researcher)

Perhaps, as the next respondent suggests, we are in danger of mutually condoning the poverty of our research skills (a point about deficiencies in the peer-review process).

> There's beginning to be a pattern with qualitative papers. I've noticed it not only in my own journal, but in my case... I don't allow them to come through the journal, but in other journals the stuff that I read... the pattern is a literature search, then without any real critical analysis straight into what the dataset... how it was generated and then a quick discussion and that's it. And that's a kind of paper by numbers and you see more and more of them. Now and of course no-one then goes back to them and starts critiquing them because they are too busy doing the same thing themselves. (HE researcher and UCET Executive Committee member).

> So I would say the typical qualitative methodology for a project in educational research is interviews and there isn't much else there [...] I suppose, that in a sense, you wonder whether they're using that method because they think it's the best method, which it may be for some things or whether they don't know any other methods or they don't feel comfortable with or experienced enough with other methods to try using those... some people using focus groups but again you don't always get the sense that they actually understand very much about what they are, only that they're, you know, they're not single interview, they're a group interview. (HE researcher).

> Almost everybody does semi-structured interviews and then mucks about for better or worse in a rather unsystematic analysis of what is going on so in the end, when I read something and I have no idea at

> the end whether the findings really related to what the interviewee thought or simply how they have responded to the researcher's agenda. (HE researcher and RAE panel member),

The overriding concern was that the use of interviews was the primary tool in most research, and that this was often chosen as a method because researchers did not have experience in, or training in, other skills – both qualitative and quantitative. There was also concern that many researchers employed qualitative methods (and perhaps quantitative methods) without rigour and without a thorough concern for the way such data had been analysed or used.

As this last respondent shows, a key concern was about the extent to which current methods approaches are actually appropriate to their purpose. Perhaps some of the poor quality qualitative work should actually have had a strong quantitative component.

> There are whole areas of social science where for various reasons people have got into the mode disproportionately of doing non-cumulative small-scale usually flawed pieces of quote unquote qualitative work. They'd have an interesting problem, perfectly interesting idea, really plausible you know good ideas about it and they thought they could test the ideas by just chatting to 20 kids or kids in this classroom versus that classroom and they'd never heard of Hawthorne effects or they'd never thought about intentionality and social mechanisms or whatever. I'm slightly exaggerating for the sake of the point. I mean I think that there are too many examples and education is not the only one where in social science people have got an interesting problem, some interesting ideas of what the

answers might be, but they can't do the research necessary to quote unquote test their propositions because they don't have the skills. So, what they do is they do the research that they can do to match the skills that they've got. So, they body swerve around the direct way of addressing the question and they have some second best or third best take on it that they get from using the only technique or methods that they can use and that's a characteristic weakness of a lot of social science and often because people have got this hang up about quantitative work disproportionately that's the bit they avoid. (Chief Executive of UK research funding agency).

Poor quality quantitative

Interestingly, even the apparently limited amount of quantitative work received quite general criticism of its quality (see also examples in Gorard 2003).

I think you can get terrible quantitative work, there are people who just think there's a kind of non problematic general linear model reality out there and you just tag variables and start with race and that's it... We don't want a generation of people who are trained, kind of cloned, trained monocular vision, kind of stimulus response, there are three variables, must be a log linear analysis, switch on SPSS, press the buttons with all the defaults on is garbage in garbage out. (Chief Executive of research funding body).

Yes, there is a lot of qualitative work and there is less quantitative work which is in any way sophisticated, that is, there are lots of people doing surveys but when you actually read the outputs from

those, they are really not much more than people being able to push some buttons on SPSS. (HE researcher).

You get people who don't think about causality, who think variables do things and who just do this 'hey, path analysis is the technique at the moment'. And they never stop to think wait a minute we have to talk to some people to answer this question or whatever. (Chief Executive of UK research funding agency).

A number of stakeholders highlighted positive recent developments such as the increasing use of multi-level modelling and the analysis of complex datasets. But there was a fear that even though such developments were being made there were too few researchers who could actually use these techniques (perhaps leading to intellectual cronyism). There was also the concern that the requirements of these sophisticated techniques meant that they had become overly technical and far removed from most researchers' minds.

I have a suspicion, more than a suspicion, I think there are quite a lot of signs that we are losing the quantitative side, just at the point when we're getting more sophisticated techniques, which I think we've got to be very, very vigilant because, there is a sort of technicist mentality that gets seduced by... essentially arithmetic or numbers, you know, and, yeah, you've got to be very careful about that. (HE researcher).

This would suggest that the situation is not just one of a shortage of quantitative research, but also a shortage of the quantitative research skills required to be able to understand, and critically review, quantitative

research. The following stakeholder suggests that in LEAs where there are the people to undertake quantitative data analysis they do not have the research background to review the methods they are employing,

> What I am saying is that although there are a lot of people doing quantitative work, with school data and pupil data, a lot of them are actually implementing central Government analysis. They are not necessarily people who have an analytical background in research and quantitative research. They are not necessarily being as critical about the methodologies and are not as aware of the limitations of the methodologies as maybe they ought to be, so you know, there is a bit of an uncritical implementation of government strategy, but the government is not worried about that. (Former LEA researcher)

As discussed above, one of the most significant 'deficits' in education research is in the lack of quantitative methods. It is not surprising, therefore, that nearly every stakeholder addressed the issue of building capacity in quantitative education research. Not only would this help to extend the range and balance of methods in education research but some stakeholders could see how this would help develop better quality research irrespective of the methods used,

> There is a real problem about the shortage of people who can do quantitative work and you can use that to get people to think in a more rigorous way about the logic of social research generally. Because quantitative researchers have to think formally and much harder about things like measurement, indicators, reliability, sampling, all the things that all researchers actually ought to think about, and Bob Burgess, who started this thing in the training, with

> the training board, was trying to get, but he couldn't figure out how to do it, because when people do non-quantitative research they tend not to think nearly as rigorous about the kind of problems that you talk about in the paper [see Gorard 2001] and about problems of generalisability and learning experimenter effects and the nature of intention and blah blah blah. (Chief Executive of a research funding body).

Many stakeholders believed that building capacity in the use of quantitative methods is not just about increasing the volume of such research, but should focus, in particular, on the more basic level of 'quantitative' techniques. (such as those recommended by Gorard 2003).

> I think I agree with that general thrust that we need more quantitative researchers, but I'm not sure it's the very, very, sophisticated techniques we're talking about. It's more something that's a bit more accessible and usable. (HE researcher and TLRP Team Leader).

This also requires a firm grounding in the assumptions and principles behind many 'quantitative' methods. This, as many stakeholders are keen to point out, may be necessary for those who already undertake quantitative research but have been trained in 'button-pressing'.

Why is it like this?

In this final section based on the interviews, we consider possible reasons for the situation above, and thus possible avenues for improvement. Here we focus on methods and in particular the quantitative/qualitative

'divide'. Our respondents clearly also commented on a much wider range of issues with appropriate plans to assist improvement (see Taylor 2002).

It may appear safer to do qualitative research because it is seen as being more subjective and hence difficult to be criticised, meaning that weak work can survive scrutiny by peers (particularly if this standard is mutual).

> This maybe a bit crude, but its easier to show that something is wrong statistically than through the touchy-feely stuff, so your reputation is less amiss if you're doing the qualitative, I think. (HE researcher and UCET Executive Committee member).

Perhaps this is partly why the Tooley and Darby (1998) report, which focussed on qualitative pieces, was such a shock to those involved. Another stakeholder argued that qualitative research is presented as being easier to do than quantitative research, thereby encouraging new researchers to undertake qualitative research, and giving a false impression of qualitative research as being not needing to be as rigorous or scientific.

> I think sometimes qualitative research is presented as being easier than quantitative research. That the concepts in quantitative research require you to be numerate, they require you to think quantitatively and that to be a qualitative researcher all you need to do is go out with a tape recorder and get some quotes. Now we know it isn't as easy as that. (HE researcher and TLRP Team Leader)

Another common response was that the choice of research method was related to the creation of 'methodological identities'. These identities, some stakeholders argued, were generated very early on in the development of researchers' knowledge and skills. They can severely restrict our approach to research training, and reinforce the selective ignorance of work involving numbers.

> It's just that they say at an early stage, they say "right I'm going to do an ethnography or I'm going to use qualitative interviews, I really don't want to know how to do anything quantitative." It's as if they make a very early decision about what they're going to learn about. (HE researcher and TLRP Team Leader)

> My experience with running our existing course is that students sometimes opt out of coming to the sessions that they don't think they are going to use and it's quite hard to persuade them that really this is part of their education and how are they going to be able to evaluate what somebody else has written if they don't come to the workshops on all the different methodologies. (HE Researcher and research training officer)

> I think it's partly that qualitative researchers or people who promote it have actually promoted it in a way that is very, very, appealing to students and so on. I've sat in on organised, co-ordinated, been involved in a lot of research methods courses and often, I know I'm caricaturing, its often said there are two ways of seeing the world, a positivist, a scientist in a white coat and you use quantitative methods and students sort of recoil from that or you can be an open and a qualitative researcher, you engage with meaning and you

know you're a warm cuddly sort of person and students think "yeah yeah that's me, I want to do that, that's me, I don't want to be a scientist in a white coat". (HE researcher and TLRP Team Leader)

The few quantitative researchers amongst the stakeholders are all too aware of this and how 'being' or being labelled a quantitative researcher has its problems.

> There's actually an anti-quantitative not just kind of ignorance. In some quarters there are people... people like me... we get labelled as positivists. This is a term of abuse. That doesn't help and it can be... I think there was a period in my own institution and this is highly selective but there was a period five or six years ago here with I know there were people going around criticising any kind of quantification. They were criticising work that I and colleagues were doing as being positivist in a kind of derogatory sense... Which is not to say that there aren't some people who are already abusing quantitative techniques and that deserves criticism but you can't be against quantification in general because there are few examples of its abuse. (HE researcher and RAE panel member);

> It's all nonsense, all of it. I'm fed up being labelled a positivist by people who wouldn't know positivism if they had it in their soup. (Chief executive of a research funding body).

Many stakeholders felt that these mono-method identities were dangerous, and made the point that the choice of methods has to be determined after a research question has been identified, rather than allowing the research to be 'method-driven'.

> My view is that they have to decide what question they are interested in and then borrow the methodology from wherever in order to address that. (HE researcher and RAE panel member).

And, as this stakeholder reminds us, this has to be combined with having an appropriate research question in order to ensure the research is relevant in the first place.

> There is a dual process I think of arriving at appropriate questions and then determining the kinds of answers and methodologies that fit those. (OECD researcher).

A number of stakeholders agree that research starts with appropriate questions, and that this needs considerably more attention from the community.

> So the first thing to say is that one has to limit it to questions that are researchable. I think the problem with the poor quality end of your continuum is that very often people try to do things that are not possible and it is inevitable that it is going to be low quality stuff. (HE researcher and RAE panel member).

Behind the need to choose methods and methodologies that are appropriate for the questions asked, i.e. a 'fit for purpose' model, is the feeling that the stakeholders are concerned that too many researchers are 'mono-methodic'. In other words researchers tend to employ a single method or approach to their research,

> I think on balance it's a good thing to be problem driven. What did they say about single methodology people – give a child a hammer and everything becomes a nail. They don't want people seeing the world through the methodological lenses that you put on in university fifteen years ago. Sounds a bit hard I know. But if knowledge is determined in parts by the ways in which it has been generated then you've got to have access to different ways of generating knowledge, at the very very least what I'm calling a passive competence. (Director of a research organisation).

Perhaps research textbooks and journals tend to be dominated by qualitative methods, generating a greater profile for this type of research, and across the entire social sciences,

> But I suppose that it's also, that if you look at what's written on research methods, there's an awful lot more written on qualitative methods than quantitative methods. I mean Sage publish about, you know, ten titles a week, as far as I can see, and that's just one publisher on qualitative. They don't publish as many on quantitative and they don't publish as many on mixed methods, so I kind of think it's a social science wide phenomenon... it's certainly true of the other social sciences that that's also an issue, so I don't think it's specific to education. (HE researcher)

Are these views of the methods in general use supported by the researchers themselves?

What do individuals report about current capacity?

Survey of methods used

We conducted a survey of current UK education researchers, by sending a self-completion questionnaire to all researchers within the TLRP, all members of BERA, and via the LSRN. The questionnaire is on our website (www.cf.ac.uk/socsi/capacity) and completed versions can be sent to us via FREEPOST. We have so far received 521 responses, including around 80% of the TLRP. The instrument asked respondents to summarise the knowledge and use of a range of methods for design, data collection and analysis. Nearly 300 methods were specified, and respondents could add further techniques. For each method, respondents were also asked to summarise the level of training, if any, they would like. For this paper, all responses have been coded in binary form (have the respondents used the method or not, and do they want training in the method or not).

Both the survey of current researchers and the RAE analysis (see below) used basically the same classification system for methods (see www.cf.ac.uk/socsi/capacity for full list). The classification was initially collapsed into 29 categories for the purposes of this analysis, as listed below. Clearly, these 29 categories do not do full justice to the range of methods reported, and the categories could have been collapsed in a number of different ways. These are the product of discussion between six researchers with expertise in different methods. It should also be noted that many of the 'subsidiary' components of each main category were used or cited very few times. For the RAE analysis, once the UoA 68 RAE returns had been coded, it was found that a number of methods

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included on the coding frame had been used in very few, if any submissions. Therefore it was decided to group these methods into larger categories to proceed with the analysis.

- Action Research
- Case Study
- Comparative study
- Computer software (for data collection and analysis), Qualitative data analysis software (e.g. NUD*IST, ATLAS.ti, Ethnograph), Quantitative data analysis software (e.g. SPSS, MlwiN, GLIM), Geographical information systems (e.g. ArcInfo), Programming languages (e.g. HTML, Hypertext, C+), IT development
- Diaries / Autobiographical / Teaching Logs / Life history
- Ethnomethodology
- Experimental design, Quasi experiment
- Group interview / Focus group / Discussion Group / Consensus Groups
- Historical design / study / analysis / Archive Research
- Intervention Research
- Interview, Structured interview, Semi-structured interview, Un-structured / Informal Interview / Open Ended Interview, One-to-one, Telephone interview, E-mail interview, Internet relay interview
- Linguistic Analysis, Semiotics, Conversational analysis
- Literature Review / Research Review / Review / Overview / Literature Survey
- Longitudinal Study
- Non-classifiable / not really a method used

- Observation, Participant observation, Non-participant observation, Observation schedules / Systematic Observation, Unstructured observation
- Philosophical study / analysis
- Pictures / paintings / artwork, Photographs, Sound recordings, Video / film footage, Maps / mental maps
- Policy study / analysis
- Programme Evaluation
- Psychometric / attitude / personality scales / Repertory Grid / Protocol Analysis / Likert Scale
- Qualitative methods (general)/ data analysis / Unclassifiable Qualitative, Interpretative approach, Grounded theory approach, Interactionism, Phenomenology, Vignette
- Quantitative methods (general) / data analysis / Unclassifiable Quantitative / Statistical analysis, Means, standard deviations, Frequencies, Graphs and charts, Cross-tabulations, Handling missing values, Corrective weightings, Probability, Set theory, Indices of inequality, Political arithmetic, Transforming data distributions, Correlation (bivariate), Regression (multivariate), Comparing means (e.g. t-tests, ANOVA), Comparing frequencies (e.g. chi-squared, Mann-Whitney), Principal components / Factor analysis, Classification / cluster analysis, Multi-level modelling, Log-linear modelling, Time-series analyses, Spatial analysis (e.g. nearest neighbour index)
- Secondary numeric data sources, Statistics of Education UK (DfES) secondary data, School examination results / Test Results, UK Census of the population, National child development survey, Youth Cohort Study of England and Wales, British Household

Panel Survey, Labour Force survey, ESRC Data Archives, International datasets

- Survey, One-off survey, Repeated survey (same people), Repeated survey (different people), Self completion survey, Face-to-face survey, Telephone survey, E-mail survey, Internet survey
- Systematic Review, Meta-analysis
- Textual analysis / Documentary Analysis, Textual data sources (e.g. diaries, letters, biographies), Written work / Exam Scripts / Work Book, Content analysis, Discourse analysis, Narrative analysis, Hermeneutics, web-based textual analysis
- Think piece / conceptual piece / theoretical development or analysis / curriculum commentary/analysis / Critical Analysis / Evaluative / Methods Research/development / Synthesis / Discussion, Reflective analysis
- Written tests, Behaviour performance test / Performance Test, Physical / chemical tests

Selected findings

Table 1 shows a summary of the methods reported as having been used by our sample of UK education researchers. Six of the top seven are largely 'qualitative' in nature (while the other, sampling, is generic), and this appears to reinforce the views above. However, three of the next four methods are largely 'quantitative', and it should be noted that the ranked differences in frequency are not large. Around three quarters of the community have conducted a survey, and 65% report having used a secondary numeric source such as the Statistics of Examinations in Schools. There is, apparently, a considerable capacity to conduct quantitative work already.

Unsurprisingly, the reported use of all methods rises with the age and experience of the respondents. This means, of course, that in a snapshot study such as this we have no way of knowing whether the situation is improving. But it is certainly true that reported expertise is less among the younger researchers than the older ones, despite the reservations of our stakeholders (see above). Apart from this, there does not seem to be a large change in method approaches over time (younger cohorts are no more or less quantitative, for example). Men are somewhat more likely to report some quantitative techniques, including multivariate analysis, experiments, and formal tests. Women are correspondingly more likely to have used focus groups, diaries, conversational analysis, and ethnomethodology.

Table 1 - Frequency of used methods

METHOD	Number	Percentage	Female	Male
Interview	480	92	93	91
Literature review	471	90	90	91
Case study	421	81	81	80
Sampling	416	80	78	83
Observation	415	80	80	80
Textual analysis	409	79	80	78
Qualitative general	400	77	78	75
Quantitative general	393	76	73	80
Survey	391	75	74	77
Triangulation	370	71	71	71
Secondary numeric sources	340	65	67	64
Group interview	339	65	70	58
Software for collection/analysis	325	63	64	61
Pictures/sound	298	57	58	56
Evaluation	289	56	53	60
Action research	269	51	51	51
Systematic review (meta-analysis)	254	49	48	50
Diaries	239	46	48	43
Experiment	212	41	36	48
Longitudinal study	199	39	37	41
Linguistic/conversational analysis	195	38	40	34
Formal tests	194	37	35	41
Scales/psychometry	184	35	36	35
Ethnomethodology	142	27	30	23
Visual/sound sources	91	17	17	17
Historical/archive	69	13	11	17

N=514

Again, Table 2 provides some confirmation for the views of the stakeholders. General quantitative methods are the most frequently reported need for training in our sample. But, again, this should not be over-emphasised because much of the other frequently requested training is in qualitative techniques.

Demand for training in all methods declines with mean age of the respondent. Older researchers are, presumably, happy with their range of skills and less likely to participate in research capacity-building activities. In general, women requested somewhat more training than men and,

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despite the above findings about previous methods usage, their requests are more commonly for qualitative methods.

Table 2 - Frequency of training requests

METHOD	Number	Percentage	Female	Male
Quantitative general	354	69	70	67
Software for collection/analysis	338	66	70	60
Textual analysis	296	58	56	60
Systematic review (meta-analysis)	292	57	57	56
Other numeric sources	276	54	53	55
Qualitative general	273	53	57	48
Interview	271	53	55	49
Sampling	259	50	54	45
Pictures/sound	253	49	54	42
Triangulation	244	48	52	41
Survey	233	45	48	42
Linguistic/conversational analysis	231	45	47	42
Longitudinal study	193	38	37	38
Observation	186	36	36	37
Experiment	185	36	36	36
Formal tests	168	33	35	30
Group interview	167	33	33	32
Ethnomethodology	166	32	34	30
Evaluation	166	32	37	26
Action research	162	32	34	29
Historical/archive	160	31	35	26
Diaries	157	31	31	30
Scales/psychometry	152	30	32	26
Visual/sound sources	149	29	27	33
Literature review	140	27	30	23
Case study	117	23	27	17

N=514

One limitation of this form of reporting is that we have no idea how often each respondent uses each technique, nor at what level of quality. To extend our search, we move now to the returns for the 2001 Research Assessment Exercise.

What do publications tell us about current capacity?

Methods and the RAE

Having experienced difficulties in assessing the quality of research returns in education for both the 1992 and 1996 RAE, a task force was established by the education panel members to suggest improvements to facilitate judgements for the forthcoming 2001 RAE. The problems stemmed largely from the scale of the enterprise. Education is routinely one of the three largest submissions to each RAE. A letter submitted to the task force by Bassey and Pollard (see Appendix A) contained suggestions for adding three additional fields of required information. The new areas included information about: field(s) of enquiry, prime audience and educational significance, theoretical and methodological description. These were intended to aid judgements on the scope and value of each submission by the panel. The guidelines by HEFCE (1999a) suggest that the Education panel should examine in detail 10% of the output, and at least 5% of each submission, making use of the theory/method field as 'A succinct description of the theoretical and methodological approach' (p.304). Research is defined here as an 'original investigation undertaken in order to gain knowledge and understanding...It also excludes the development of teaching materials that do not embody original research' (HEFCE 1999b, p.4).

This paper uses the information now publicly available in these additional fields to give a general overview of the nature of research being undertaken in departments of education throughout the UK. The new 'theory/method' field, although limited to 100 characters, has provided a valuable 'snapshot' into education research, allowing analysis to be

carried out on a much larger scale than has previously been possible (around 8,700 individual returns).

Information submitted from each institution was downloaded from HERO (URL:<http://www.hero.ac.uk/rae/>), and strict guidelines were followed by the two members of research staff involved in the coding process. The coding frame used to record the different methods employed in the research returns was based on the ESRC-funded Research Capacity Building Network consultation instrument (see above), although minor changes were made during the coding process in light of anomalies. Each submission was coded for type (book, article etc.), journal title (where appropriate), and each method specified in the field. Of course, this coding process involved compromise and overcoming some problems. Probably the first finding from this work is that greater guidance for consistency is required in the completion of this field if it is to be used again. We need much greater consensus in the use of method terms (see Sheffield and Saunders 2002), probably including the creation of standard thesauri for searching and indexing of methods, as we already have for substantive areas.

The theory/method field is a limited 100 characters, not allowing complete description of the complex methods utilised in all forms of research. There were also inaccuracies in recording, some confusion over what should be included, and a lack of time and effort by some institutions to complete this new field. McNay (2003) states that the additional fields for the education UoA for the 2001 RAE should facilitate in setting standards of research quality, which is the purpose for which they were intended. However he acknowledges that the new fields 'were not well used in their first time of operation. This was a positive

innovation, but may need a second round of usage to get the best from it' (McNay, 2003, p.52).

Throughout our coding process it became apparent that patterns were emerging for different institutions and different authors in the way the new fields had been completed. Consequently it was considered important to discover more about the RAE input procedure as the method for recording this information by each institution directly determines the results of any analysis undertaken using this field. Following discussions with a number of staff at Cardiff University School of Social Sciences involved in the 2001 RAE education submissions process, it became clear that there had been a level of confusion surrounding the new fields of information. In Cardiff the RAE is a centralised process both at an institutional and departmental level. Therefore, each submission was checked, and on many occasions amended. A number of staff members had clearly not read the guidelines or had not treated the new fields with the level of attention required. Overall, the new fields were found difficult to complete, and one can only imagine the different ways in which the field could have been interpreted in Universities with a less centralised process.

Therefore, we start our analysis in the knowledge that these fields are limited in use and imperfectly completed. However, such a situation is not uncommon. In 1992 an audit of RAE submissions was undertaken to verify the accuracy of the RAE returns. 10 per cent of submissions were scrutinised and it was found that 'whilst the audit has not identified any cases of excessive and unacceptable opportunism, it has identified a number of misinterpretations of the data requested and data entry errors' (HEFCE, 1992). An audit was also undertaken in 1996, and 'checks

revealed that the submissions contained a number of minor inaccuracies, and a smaller number of quite significant errors' (HEFCE, 1996 p. 4). During our own coding process of the 2001 education RAE returns, a number of errors were found in the information submitted. These were primarily in the information submitted for journal entries (mismatching ISSNs, misnamed journals etc.). However, since these inaccuracies were found merely by coding the information, we suspect that if the information had been checked more thoroughly with the sources then many more inaccuracies would have been discovered.

A large number of submissions had clearly undertaken empirical research but had not included enough information about the methods used to allow them to be included in the coding frame. There were also a number of returns which gave *no* indication of methods, and others that displayed general lack of regard for the information required. We quote here a few examples of the 'completed' theory/method field that would give problems to any methods classification system.

- Empirical investigation of visually impaired children's play and language.
- Analysis of course materials
- Uses two projects to illuminate strengths and weaknesses of model
- Gender studies: analysis of experiences & attainments of academically able boys
- Research
- Cognitive development
- Empirical study of learning: comparison of approaches

It is important, we feel, that the problems associated with re-analysis of this field are discussed, so that the findings are viewed with appropriate caveats. However, we also wish to stress that (unlike the richer data used above) this analysis enables us to make a comparison of around 8,700 research pieces - the largest such overview of methods in education research.

Selected findings

Table 3 summarises the type of each of the 8,700 publications submitted to the education panel. While each publication was submitted by an individual, they are grouped here in terms of the RAE outcome for the centre by which they were submitted (graded 1 to 5*). Only books, edited books, journal articles, conference publications and reports to external bodies feature heavily, and they appear in roughly the same proportions for all RAE outcomes (only one submission was rated 1). Therefore, there is not a mode of publication that is disproportionately high or low ranked. In fact for submissions rated 3a and above, the relative frequencies for each type are surprisingly similar. For the only submission rated 1, conference papers tend to appear in place of authored books and chapters (but not journal articles). For the eight submissions rated 2, however, chapters in books tend to appear in place of journal articles (perhaps an indication that this medium is less highly considered or less involved in peer-review). For the two submissions rated 5* there is a higher proportion of reports to external bodies. This may not be important, or it could be seen as a presage of the kind of high impact and 'third mission' dissemination needed for success in future RAEs.

Table 3- Percentage of each publication type by RAE outcome

	1	2	3a	3b	4	5	5*	All
Authored book	7	12	10	12	10	15	12	12
Edited book	2	2	3	2	2	2	2	2
Chapter in book	9	32	22	21	23	25	24	23
Journal article	57	43	58	52	58	53	52	55
Conference paper	22	6	4	5	3	1	2	3
Software	0	1	0	0	0	0	0	0
Report ext. body	2	3	3	4	4	3	6	4
Internet publication	0	1	0	1	0	0	1	0
Internet subscription	0	0	0	0	0	0	0	0
Exhibition	0	0	0	0	0	0	0	0
Scholarly edition	2	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	1
TOTAL	100	100	100	100	100	100	100	100

Note: percentages have been rounded.

There were over 1,000 journals represented in all submissions to education, a staggering number suggesting considerable diversity in approach and audience. In fact, this works out at around one journal for every two of the 2,045 UK education researchers submitted to the 2001 RAE. Table 4 shows the frequency of the 50 most frequently submitted journals, their relative rank for submissions rated 5/5* and 1-4, and their Social Science Citations Index impact score (where the journal is part of the index – itself an indicator of impact in some ways). Table 4 shows

several interesting patterns (and the following section considers the extent to which articles in a subset of these journals can be labelled quantitatove or qualitative). The majority of these highly-placed journals in education are not in the SSCI, and the relative frequency of an impact score declines in the table, and more so for the journals outside the top 50 (and not featured here). In general, higher impact journals (and journals with an impact score) are somewhat more closely associated with submissions ranked 5/5*. The highest 'impact' journal here, Comparative Education, only appears in the top 50 for 5/5*, for example. So do the British Journal of Educational Psychology, the International Journal of Educational Development, and the Journal of Philosophy of Education. Even so, there are 'impact' journals that show the opposite. Computers in Education has a reasonable impact score, and is the fourth most frequent journal for submissions rated 1-4, but does not appear in the top 50 for 5/5*. There are, of course, problems with the SSCI impact scores. They disproportionately favour US-relevant publications, and being part of the Index is not based solely on impact, but also on balance between titles and fields.

Table 4 also shows that despite the large overall number of outlets for publication, the RAE-relevant publications for education tend to cluster in a relatively small number of titles (further details in Appendix B). The majority of the 1,006 different journals submitted to UoA68 appear only once (such as Information Technology in Nursing, or the Journal of Property Research). It should therefore be emphasised that, for the purposes of the following discussion, all of the journals mentioned are among the most highly-submitted for education. Dividing the submissions into 1-4 and 5/5* also divides the titles into three types. The first type is represented by the British Educational Research Journal, the

International Journal of Science Education, the Journal of Education Policy, Research Papers in Education, and so on. Articles in these journals were commonly submitted by authors in both outcome groups equally. As we would expect for 'popular' journals the top 50 tends anyway to emphasise the generic titles which publish empirical work almost irrespective of discipline and subject matter. The second-ranked journal, the International Journal of Science Education, is an interesting divergence from this 'generic' trend.

The second group of journals in Table 4 are those disproportionately presented by researchers in 5/5* submissions. These include the British Journal of Educational Psychology (already mentioned), Assessment in Education, Comparative Education, the British Journal of Guidance and Counselling, the International Journal of Educational Development, and so on. It is interesting to consider whether these are specifically '5' journals because of their impact, quality, and peer-review, or whether they represent areas or types of research especially prevalent in some 5-rated departments.

The third group of journals is disproportionately represented in 1-4 rated submissions. These include Computers in Education (as above), Educational Management and Administration, Educational Research, Assessment and Evaluation in Higher Education, the Journal of Vocational Education and Training, and so on. It is interesting that both of the leading UK education management journals were more often presented by 1-4 departments, and might be due to the focus of this work being conducted outside what are currently 5/5* departments. Similar points could be made about research into post-compulsory education (including the higher and vocational sectors).

Table 4 – Frequency of articles by journal and impact

Rank	Journal	Frequency	1-4 rank	5/5• rank	Impact
1	British Educational Research Journal	100	1	1	
2	International Journal of Science Education	80	2	2=	0.48
3	Oxford Review of Education	64	13=	2=	0.30
4	Journal of Education Policy	58	7=	5=	0.62
5=	British Journal of In-Service Education	57	3	16=	-
5=	Research Papers in Education	57	9=	5=	-
7	British Journal of Educational Studies	56	5	13=	0.78
8	British Journal of Sociology of Education	55	12	4	0.71
9	The Curriculum Journal	49	18=	7	-
10	Educational Studies	48	6	26=	0.32
11	Teacher Development	46	15=	11	-
12	Computers in Education	45	4	-	0.57
13=	Cambridge Journal of Education	44	25=	9	-
13=	Educational Review	44	9=	23=	0.25
15	Educational Management and Administration	40	7=	-	-
16	School Leadership and Management	39	13=	26=	-
17	Educational Research	37	11	-	0.36
18=	International Journal of Inclusive Education	36	29=	16=	-
18=	Studies in Higher Education	36	20=	26=	0.52
20=	Compare	34	34=	18=	-
20=	Gender and Education	34	25=	26=	-
20=	Journal of Further and Higher Education	34	20=	39=	-
20=	Teaching in Higher Education	34	18=	44=	-
24=	British Journal of Educational Psychology	33	-	10	0.75
24=	Journal of Education for Teaching	33	45=	13=	-
26	Association for Learning Technology Journal	32	23=	44=	
27=	Assessment and Evaluation in Higher Educ.	31	23=		
27=	History of Education	31	28=	39=	
27=	Journal of Vocational Education and Training	31	15=		
27=	Research in Education	31	20=		
31=	Assessment in Education	30		8	
31=	Educational Psychology	30	38=	23=	
31=	International Journal of Lifelong Education	30	15=		
34	Medical Education	29	29=	44=	
35	British Journal of Special Education	28	41=	26=	
36=	Comparative Education	27		23=	1.02
36=	Journal of Computer Assisted Learning	27	36=	44=	0.23
38=	British Journal of Guidance and Counselling	26		29=	0.47
38=	Innovations in Education and Training Intl.	26	25=		0.19
38=	International Journal of Educational Devpt.	26		13=	0.33
38=	Journal of IT for Teacher Education	26	45=	33=	
38=	Journal of Research in Reading	26		20=	

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38=	Research in Science and Technology Educ.	26		18=	
44	Higher Education Quarterly	25	36=		
45=	Changing English	24		12	
45=	International Journal of Early Years Educ.	24	45=	44=	
45=	International Studies in Sociology of Educ.	24		20=	
45=	Journal of Philosophy of Education	24		26=	0.42
45=	Language Learning Journal	24		39=	
45=	Support for Learning	24			

For all submissions, whether journal articles or not, Table 5 shows the frequency of the collapsed categories for their methods descriptions. A very large number of submissions were based on think pieces (18% overall), or literature reviews (10%), or were non-empirical or otherwise unclassifiable by method (4%, see above). Thus, over 32% of the total submission to education was not clearly empirical (according to the theory/method field), and this has not, apparently, hindered success since this 32% applies to 5/5* as much as 1-4. The only hint of a difference here lies in the unclassifiable returns which were more prevalent in 1-4 returns. Many of the examples given above that caused us problems in the coding process were in 1-4 returns. Perhaps these institutions had a less centralised checking system for RAE returns.

Of the remaining 68% of submissions with a clearly flagged empirical component, the most common single methods were surveys and case studies (8% each) – one apparently quantitative and one perhaps more qualitative. This balance might surprise our stakeholders (reported above) who lamented the lack of quantitative work in education. If we add the frequencies for surveys, quantitative (unspecified in the field), experiments, scales, formal tests, and secondary numeric data, we find that over 14% of the returns were clearly or largely quantitative. If we add together case studies, qualitative (unspecified), interviews, textual analysis, ethnomethodology, linguistic analysis, group interviews, and

diaries, we find that 28% of the returns were clearly or largely qualitative. The balance is therefore 2:1, a large difference but perhaps less than previous commentaries have suggested, and one that confirms the findings from our survey (see above). The prevalence of all methods is remarkably similar across the two groups defined by RAE outcomes.

Naturally, many of the authors cited two or more distinct methods (and we have run the analysis underlying Table 5 using *all* methods cited, leading to higher frequencies but without changing the overall pattern). The most common combination is the use of interviews and surveys together. In addition, some of the method descriptions used by authors do not allow us to categorise them definitively as either qualitative or quantitative. Examples include action research, interventions, case studies, and comparative work. We might be disposed to believe that these are all largely qualitative in practice, but the theory/method field does not specify this. This is one of the reasons that we look, in the next section, at the methods used in a selection of journals.

Two notable features of Table 5 are the paucity of experiments and secondary numeric data (both less than 1% of the total) among the pieces submitted to the RAE as described by the theory/method field. This is notable in light of the reports of researchers in the previous section that 41% have conducted an experiment, and 65% have used secondary numeric data. It is not clear why these methods should be selectively ignored by authors when completing the theory/method field, and we may conclude that while many people know how to work with both approaches, these are not actually common (see also next section).

Table 5 - Frequency of reported first or main method

METHOD	Number	Percentage	Percentage RAE 1-4	Percentage RAE 5-5*
Think piece	1533	18	17	19
Literature review	828	10	10	10
Survey	697	8	8	8
Case study	674	8	9	5
Qualitative unspecified	494	6	6	5
Comparative	479	6	5	6
Policy study/analysis	465	5	5	6
Interview	407	5	5	5
Textual analysis	392	5	4	5
Not classifiable/no method	364	4	5	3
Historical/archive	344	4	4	5
Quantitative unspecified	271	3	3	4
Ethnomethodology	268	3	3	4
Action research	233	3	3	2
Philosophy	191	2	2	3
Observation	190	2	2	2
Programme Evaluation	131	2	1	2
Longitudinal study	121	1	1	2
Linguistic/conversational analysis	102	1	1	2
Experiment	94	1	1	1
Scales/psychometry	80	1	1	1
Software for collection/analysis	65	1	1	0
Group interview	51	1	1	0
Formal tests	46	1	1	0
Diaries	37	0	0	1
Systematic review (meta-analysis)	31	0	1	0
Pictures/sound	29	0	0	0
Intervention	25	0	0	0
Secondary numeric data	15	0	0	0
Total	8691	100	100	100

Because of the nature of the RAE we are able to use this data to make some tentative judgements about quality. There is clearly some good research in education using both quantitative and qualitative approaches. However, we have still not satisfactorily solved the issue of judging prevalence. The theory/method field is limited, and relies on unstandardised self-reporting. So we move to a brief assessment of what

is being published, both to triangulate, to some extent, our analyis here and to consider further the differences between journals illustrated above.

What is being published?

For the purposes of this brief analysis we selected three journals, and collated the methods used in all papers for the calendar year 2002 (the most recent complete year at time of writing). We chose for this purpose BERJ, the most commonly submitted to the RAE, the British Journal of Educational Psychology, a disproportionately 5/5* publication, and Educational Management and Administration, the most clearly 1-4 publication (see above).

BERJ

As noted above the journal BERJ was the most widely submitted outlet for RAE papers. In 2002, the most recent complete year, BERJ contained 42 articles in six issues and these showed several differences to the RAE returns more generally. The category 'unclassifiable' from the RAE analysis on the basis of the method field (3%) obviously does not exist for papers in BERJ, nor are any of the pieces stand-alone literature reviews (as befits a research-based journal). This means that the other categories should be larger. Only five articles (12%) were apparently non-empirical 'think pieces' compared to 18% in the RAE. The most common category is interviews, occurring in a total of 18 papers (43%), much higher proportionately than in the RAE (17% interviews, case studies, ethnomethodology, and conversational analysis). The BERJ figure includes 11 pieces simply with interviews, one piece simply with

interviews but related to a companion piece involving regression analysis, two combining interviews and surveys, and one each with discourse analysis, case study (with interviews but also documents and observation), interview with observation, and interview with textual analysis. Four BERJ papers used texts (usually pre-existing), one was based on 'qualitative' observation, and one on autobiography.

Of the remainder, 13 (or 31%) were clearly 'quantitative' in nature, not counting a factor analysis that also appeared in one of the papers above. Another paper used factor analysis with psychometric scales, three used multi-level modelling in a school-effectiveness vein, and three used regression with secondary data (but not MLM). Two papers reported a questionnaire survey with comparison of means, one a survey with regression, and one a survey with a school-based test. There was a further paper using secondary data for simple numeric analysis, and one conducting observation leading to numeric outcomes. Thus, numbers-based papers were a significant component of BERJ output, and exhibited considerable variation in technique (again contrary to the commentary with which this paper started).

BJEP

The British Journal of Educational Psychology published 28 articles in four issues during 2002 (with no special issues). Of these, all but one (96%) were clearly or largely quantitative – the odd one being a literature review. There were five experiments or quasi-experiments (18%), a much higher figure than all other sources (see above). Seven of the papers were based on data collected via a questionnaire (25%) and then analysed via factor analysis (3), Rasch modelling, comparison of means (2), multi-

level modelling, regression and cluster analysis. Five were based on formal tests, variously with a questionnaire, comparison of means (3), and factor analysis. One further paper used factor analysis on pre-existing data, one used growth curves, and one each correlation, Rasch modelling, and longitudinal assessment data. The prevalence, high level and variety of quantitative techniques may be a function of the disciplinary nature of this journal, but it is also notable that this outlet clearly distinguishes between high and low-medium RAE outcomes.

EMA

Educational Management and Administration published 24 articles in four issues during 2002 (including a special issue on management theory). Of these 7 (29%) were think pieces with no discernible empirical content, and a further three (9%) were literature reviews. Six were based on interviews (18%), including one in conjunction with textual analysis, and another with secondary numeric data. Three papers described 'qualitative' case studies, one was comparative, one a policy analysis, and three used questionnaire with analysis of frequencies and means. Therefore EMA, which was disproportionately submitted by departments gaining RAE 1-4, contained less empirical work overall than the other journals considered, and also considerably less quantitative work. Perhaps it is fields and journals such as these that lead commentators to the idea that there is a marked lack of quantitative skills.

Discussion

Overall, across three journals in 2003, 17% of the articles were clearly or largely non-empirical (although this description includes literature reviews based on empirical evidence), 4% were empirical pieces using a combination of 'qualitative' and 'quantitative' methods (therefore a rather rare phenomenon), 34% used qualitative methods alone, and 47% used quantitative methods alone. While the selection of journals used here may indeed overemphasise quantitative approaches (although there is no certainty that Assessment in Education would be any different to BJEP, in this respect), this simple analysis of published papers in one year suggests that at least one element of our stakeholders view of problems in education research is incorrect. There is no particular shortage of quantitative work as evidenced by any of our indicators – the reports of researchers themselves, RAE returns, and journal contents.

If there is, indeed, more quantitative work going on in education than is usually realised by commentators, then why is there this discrepancy? There are several possible explanations. First, of course, the distinction between quantitative and qualitative work is not a clear one, and taken literally almost all work involves both textual analysis and counting, so our classifications may be invalid. Second, our stakeholders generally talked about education research as an activity in higher education institutions in specialist education (largely teacher training) departments. Much research relevant to education goes on outside of these, in other disciplines (such as psychology), in governmental structures, and in outside bodies such as NERF or NIACE. Perhaps the distinction is not so much within education HEIs (our analysis of RAE returns shows little difference between high and low ranked departments in their use of

methods), but between HEIs (who may do less quantitative work) and everyone else. Our stakeholders were not, therefore, bemoaning the lack of quantitative work in general, but in what are mainly teacher training departments.

Third, merely having work labelled 'quantitative' is of no consequence if it is of obviously poor quality, which is what several stakeholders complain about. Perhaps they mean that there is little 'good' quantitative work. In the same way that there are complaints about people simply taping a few unstructured interviews with a convenience sample, and then using grounded theory to extract a few quotations to make a paper, 'by numbers' as one of our informant said, there are complaints that quantitative work should not be simply assigning numbers to questionnaire responses and then pushing some buttons on SPSS. There has been a recent growth in demand for more field experiments in public sector research (e.g. Shavelson and Towne 2002), in order to find out what works in realistic settings. Our summary of three sources suggests that very little of such work is going on in education. In fact, in our review there were more articles decrying the academic hegemony of 'what works', and bemoaning the fact that experiments were swamping the field than there were actual field experiments. Similar comments apply to the published use of secondary numeric data. Such data is being produced by governments, or archived by research councils, and advocated by stakeholders, but little use appears to be made of it. Only 15 pieces out of 8,691 RAE returns, and two articles in our three journals used existing large-scale datasets for any significant reanalysis (and both of these were by the same author).

One practical conclusion of this re-analysis would be that improvement in the quality (and relevance) of UK education research is unlikely to come via a magic bullet of merely increasing the proportion of work deemed quantitative. Rather, we may need an improvement in all forms of research, a greater understanding of a wide range of approaches, clear research questions, fit between questions and methods (not methods identities), and perhaps most pressingly a greater transparency in our warrants. It may be the process of transforming research findings into useful and relevant knowledge that requires more care (Gorard 2003). All of these are issues also raised in our stakeholder interviews. For example, researchers need to take more care when suggesting how relevant their research is to policy-makers and/or practitioners or when warranting their findings.

> One of the things that I am always concerned about is the way that educational researchers express the claims that they make and I do think that with an experienced educational researcher, the way that they make claims for their exploratory studies is pretty dicey. (HE researcher and RAE panel member)

For it is not weak research *per se* that does damage to the field (presumably this is a necessary concomitant of innovation and growth), it is the unwarranted claims based on weak research that do the harm. Of course, it is possible to argue that since our stakeholders appear to have been misled about the amount of quantitative work going on, then they may be wrong about the other things as well. In fact, one of the conclusions of this paper is to reinforce the irony that much of the criticism of the quality and relevance of education research evidence is itself evidence-free.

Appendix A

Extract from a paper submitted to the RAE task group by Pollard and Bassey (URL: <http://www.niss.ac.uk/education/hefc/rae2001/edtaskgrp.html>)

It is suggested that the RA2 returns in Education have three additional fields as descriptions for publications that could help the panel in making its judgements. These are: field(s) of enquiry, prime audience and educational significance, theoretical and methodological description.

Theoretical and methodological description. Here 'theoretical' refers to any conceptual framework within which the research may be set. 'Methodological' is taken to mean research approach and arena for data collection, analysis and interpretation. (One line only – not more than 64 alphanumeric characters).

Some illustrations show how this could illuminate the title of an article with value:

Ethnographic case studies in 3 primary schools in Kent
Random survey of 10% of secondary schools in Lancashire
Action research on changing management in an FE college
Slavin-type review of 33 studies of calculators in primary ed
Post-modernist critique of UK policy on teacher education
Master's level text on qualitative research in education
Geographical analysis of LMS funding documents

We suggest that this would alleviate the problem met by the previous panel of knowing what a paper is about when it is not possible to actually read it.

Appendix B

Listed below are the remaining journals (and their ranking) appearing in the top 50 most frequently submitted to the 2001 RAE in terms of RAE outcomes. The first group appear in the top 50 for submissions rated 5/5* but not those rated 1-4. The next group is the obverse. Where available, the ranking score is followed by the impact score. The latter reinforce the point made above – as we read down the list of highly-submitted journals the impact scores tend to decline in size and most clearly in frequency, and they are more common for journals more highly-submitted by 5/5* outcomes.

5/5*

International Journal of Educational Research 20=

Children and Society 26=

School Effectiveness and School Improvement 33=, 0.24

Environmental Education Research 33=

Science and Education 33=, 0.84

Emotional and Behavioural Difficulties 33=

Educational Studies in Maths 33=

Reading 39=

Educational and Child Psychology 39=

For the Learning of Mathematics 44=

Teaching and Teacher Education 44=, 0.4

1-4

Journal of Design and Technological Education 29=

Scottish Educational Review 29=

Mentoring and Tutoring 38=

Research in Post-Compulsory Education 38=

Directions – Journal of Art and Design Education 41=

Quality Assurance in Education 41=

Welsh Journal of Education 41=

School Science Review 45=

British Journal of Educational Technology 45=, 0.44

Educational Action Research 50

References

BERA (2002) Contribution From The British Educational Research Association to the Joint Funding Bodies Review of Research Assessment, <http://www.rareview.ac.uk/invite/responses/subject.asp> [Accessed 10th April 2003]

Gorard, S. (2001) *A changing climate for educational research? The role of research capacity building*, Occasional Paper Series Paper 45, Cardiff: Cardiff University School of Social Sciences

Gorard, S. (2003a) Warranting claims from non-experimental evidence, *Evaluation and Research in Education*, (forthcoming)

Gorard, S. (2003b) *Quantitative methods in social science: the role of numbers made easy*, London: Continuum, ISBN 0826465862 (paperback), ISBN 0826465870 (hardback), 312 pages (in press)

Gorard, S. (2003c) Understanding probabilities and re-considering traditional research methods training, *Sociological Research Online*, 8,1, 12 pages

Hargreaves, D. (1997) In Defence of Research for Evidence-based Teaching: A Rejoinder to Martyn Hammersley, *British Educational Research Journal*, 23, 4, 405-420

Hargreaves, D. (1999) Revitalising educational research: lessons from the past and proposals for the future, *Cambridge Journal of Education*, 29, 2, 239-249

HEFCE (1992) Research Assessment Exercise 1992: The Outcome. [WWW] URL: < http://www.niss.ac.uk/education/hefc/rae92/c26_92.html> [Accessed March 4th 2003]

HEFCE (1996) *Research Assessment Exercise 1996: The Outcome*. Bristol: Higher Education Funding Council.

HEFCE (1999a) Research Assessment Exercise 2001: Assessment panels' criteria and working methods, www.rae.ac.uk

HEFCE (1999b) Research Assessment Exercise 2001: Guidance on submissions, www.rae.ac.uk

HEFCE (2001) *2001 Research Assessment Exercise: The Outcome*. Bristol: Higher Education Funding Council.

Hillage, J., Pearson, R., Anderson, A. and Tamkin, P. (1998) *Excellence on research in schools*, Sudbury: DfEE

Hodkinson, P. (1998) 'Naivete and Bias in Educational Research : The Tooley Report' *BERA Research Intelligence* No. 65 Aug 1998 [WWW] <URL http://www.bera.ac.uk/ri/no65hodkinson.html> [Accessed 6th March 2002]

Joint Funding Bodies (2003) 'Update on the UK funding bodies' review of research assessment' RA Review [WWW] URL:<http://rareview.ac.uk/meetings/related/update2.asp> [Accessed 10th April 2003]

Marshall, G. (2001) *Social Sciences*, Swindon: Economic and Social Research Council

McNay, I (2003) Assess the assessment: an analysis of the UK Research Assessment Exercise, 2001, an its outcomes, with special reference to research in education *Science and Public Policy* Vol 30, No. 1 pp 47-54

Richardson, W. (2002) Educational Studies in the United Kingdom, *British Journal of Educational Studies,* 50, 1, 3-56

Sheffield, P. and Saunders, S. (2002) Using the British Education Index to survey the field of educational studies, *British Journal of Educational Studies,* 50, 1, 165-183

The United Kingdom Parliament (2002) *Select Committee on Science and Technology*, http://www.parliament.the-stationery-office.co.uk/pa/cm200102/cmselect/cmsctech/507, accessed 31/10/02

Taylor, C. (2002) *The RCBN Consultation Exercise: Stakeholder Report,* Occasional Paper 50, Cardiff University School of Social Sciences

Tooley, J. and Darby, D. (1998) *Educational research: a critique*, London: OFSTED

Woodhead, C. (1998) Academia gone to seed, *New Statesman*, 26 March 1998, pp. 51-52

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